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REMARKS

Claims 1-5 were in the application as originally filed. Claims 4 and 5 have been withdrawn from consideration due to a restriction requirement which has been made final. Claim 3 and Claims 6-16 have been previously submitted.

REJECTION UNDER 35 USC 102(b) and 103(a)

Claims 2-3 and 11-16 were again rejected under 35 USC 102(b) as anticipated or in the alternative as obvious over Okamoto et al. (US 5,616,173), Carroll et al (US 5,162,062) or Oba et al. (US 5,670,089). This rejection has been withdrawn regarding Claims 1 and 6-10. However, Claims 1 and 6-10 are rejected under 35 USC 102(b) over Chacko et al. (6,228,288). Chacko has been cited as disclosing a polymer film conductive composition comprising 3-20 wt % polyimide resin, 0-10 wt % cyanate ester resin and 40-85 wt % metallic electrically conductive particles.

The Examiner maintains his rejection and asserts that Okamoto et al. disclose a thick film paste composition consistent with applicant's claim limitations.

Applicant again respectfully disagrees that the invention is either anticipated or obvious.. Independent Claim 1 and sequential claims are now directed to a conductive composition consisting of (a) 50-95% finely divided particles of an electrically-conductive material dispersed in (b) a liquid vehicle, for use in the manufacture of an electrically-conductive pattern on a substrate for the use of reducing cross-sectional area and width while retaining conductivity and resistivity for automotive uses. Independent Claim 2 is directed to a conductive composition comprising (a) finely divided particles of an electrically-conductive material; (b) an inorganic binder selected from lead borates, lead silicates, lead borosilicates, cadmium borate, lead cadmium borosilicates, zinc borosilicates, sodium cadmium borosilicates, bismuth silicates, bismuth borosilicates, bismuth lead silicates, bismuth lead borosilicates, oxides or oxide precursors of metals, and mixtures thereof; dispersed in (c) a liquid vehicle wherein the total composition contains 50-95% by weight solids and wherein said inorganic binder is present at less than .08% of the total solids in the composition. Both claims have been amended to stress the automotive uses. Dependent Claims 13 and 14, depending from Claim 2, include a binder of less than 0.5% and 0.3%.

Okamoto et al (5,616,173) discloses thick film paste composition used to apply a conductive pattern. As stated in column 3, lines 6-8, the total amount of inorganic binder composition is usually 1 to 20 wt %, and preferable 1 to 10 wt %, of the solid portion of the

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composition. Please note, that the presently claimed composition of Claim 1 does not contain an inorganic binder and the composition of Claims 2, 11 and 14-16 contain inorganic binder at less than 1.0 % of the total solids in the composition. **These ranges fall outside of the ranges of binders taught by Okamoto.**

Applicants maintain that Okamoto does not anticipate the presently claimed composition. Furthermore, applicants maintain that a *prima facie* case of obviousness has not been established with respect to Okamoto. Accordingly, applicants again respectfully request that these rejections be withdrawn.

According to the MPEP § 2142, in order to establish a *prima facie* case of obviousness, first, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Applicants respectfully submit that none of the requirements for a *prima facie* case of obviousness are met by Carroll *et al.*, Okamoto *et al.*, or Oba *et al.*, as none of the references teach a composition lacking the inorganic binder which exhibits good adhesion to the substrate, and avoids or minimizes disadvantages, such as cracking of the enamel. Presently claimed Claim 1, does not contain an inorganic binder, or contains inorganic binder at less than 1% of the total solids in the composition (described in claim 2).

Furthermore, regarding the first requirement, Carroll *et al.* does not provide motivation to modify the described invention to make the presently claimed composition described by Claim 1. Regarding the second requirement, one skilled in the art would not have a reasonable expectation of success in making the presently claimed composition, based on the Carroll *et al.* disclosure. Regarding the third requirement, Carroll *et al.* does not teach or suggest all the claim limitations; for example, Carroll *et al.* does not describe compositions which contain no inorganic binder, or inorganic binder less than 1% of the total solids in the composition. Accordingly, applicants respectfully request that this rejection be withdrawn.

Carroll *et al.* is directed to a method of making a multilayer electronic circuit comprising very specific steps. The present invention relates to a composition, either without or with less than 1%, preferably less than 0.5%, preferably less than 0.3% and more preferably less than 0.1% of inorganic binder, and its use in heating elements. Nowhere in Carroll *et al.*

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does it teach that adhesion can be obtained without any binder, or with less than 0.5%, of an inorganic binder.

Additionally, Carroll et al. is cited as disclosing conductor paste formulations containing silver, organic vehicle and frit. Carroll et al. discloses compositions in Table 5; however, Carroll et al. does not describe compositions which contain inorganic binder less than 0.5% of the total solids in the composition. Furthermore, Carroll et al. describes the use of a sintering inhibitor. In addition, the formulation of Carroll is used for making a multilayer electronic circuit. The present invention does not relate to a multilayer electronic circuit. The presently claimed composition does not contain an inorganic binder (described in claim 1), or contains inorganic binder at less than 0.5% of the total solids in the composition (described in claim 2).

Applicants maintain that Carroll et al. does not anticipate the claimed invention, and respectfully request that the rejection be withdrawn. Furthermore, applicants maintain that a prima facie case of obviousness has not been established with respect to Carroll et al.

Oba et al. discloses terminal electrode composition for multiple-layered capacitor made of precious metal particles and 0.5-7 wt. % of an inorganic binder. Furthermore the inorganic binder of Oba discloses suitable frits which contain PbO (column 2, ll 52-60, and Table 1 of the Examples). The composition of claim 1 does not contain an inorganic binder and thus falls outside of Oba et al.

Oba, US 5,670,089, is also cited by the Examiner as disclosing the present Invention, either specifically or inherently. Oba teaches a terminal electrode composition for a multiple-layered capacitor, characterized by being made of precious metal particles and 0.5 to 7 wt. % (based on the weight of the precious metal particles) of an inorganic binder having a 400°- 500°C. glass transition point and a 400°-550°C glass softening point, wherein said inorganic binder comprises 15-30 wt. % SiO₂, 1-18 wt. % B₂O₃, 35-70 wt. % PbO and 5-20 wt. % of at least one oxide selected from the group consisting of Al₂O₃, ZrO₂ and TiO₂. Dependent claims of Oba cover compositions wherein said inorganic binder further comprises 1-20 wt. % of at least one oxide selected from the group consisting of ZnO and CuO, and 0.5-10 wt. % of at least one oxide selected from the group consisting of Na₂O and Li₂O; wherein said inorganic binder further comprises an additional 0.01-3 wt. % of at least one oxide selected from the group consisting of Al₂ O₃, ZrO₂ and TiO₂ and wherein said precious

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metal particles are silver, and wherein said silver particles have a particle size of 0.05 to 10 microns.

Applicants maintain, therefore, that Oba does not anticipate the presently claimed invention. Furthermore, applicants maintain that a prima facie case of obviousness has not been established with respect to Oba.

Claims 1 and 6-10 were rejected under 102(b) over Chacko et al. (6,228,288). Chacko et al. is cited as disclosing a polymer film conductive composition. The Examiner asserts that the reference either specifically or inherently meets the present claims. Chacko et al. claims "A conductive composition, based on total composition, comprising: a) 3-20 wt. % of polyamide-imide resin; b) greater than 0 up to and including 10 wt % cyanate ester resin; and c) 40-85 wt. % finely divided electrically conductive particles selected from the group consisting of silver, copper, nickel, silver coated copper, silver coated nickel, carbon black, graphite and mixtures thereof, wherein all of (a), (b) and (c) are dispersed in a 20-40 wt. % organic solvent." The presently claimed invention lacks the optional (0-10 wt %) cyanate ester resin. Further, while Chacko overlaps the present range of conductive particles, the present invention lacks 3-20 wt. % of polyamide-imide resin. The Chacko invention is further in a different electronic field from the present invention. Chacko relates to thick film composition for use in the position sensing field. While both inventions seek good adhesion to substrate, there is no indication that resistance characteristics useful for generating heat (e.g. as in defogging and defrosting uses) are important in Chacko. In view of these differences applicant asserts that the present invention is not anticipated nor made obvious by US 6,228,288.

Claims 1 and 6-10 were also newly rejected over JP-2000-285731. The examiner asserts that the present composition does not mention the items in the preamble of applicant's claims but sets forth all the other limitations. JP-2000-285731 describes a conductive paste that does not contain a glass frit. The problem solved by that invention was to layer a coating on a ceramic substrate and to avoid gaps in sintering. Accordingly, therefore this application does not anticipate or make obvious the embodiments that include glass frit. One skilled in the art would also not be likely to arrive at the present invention using JP-2000-285731 as the fields of these inventions are different.

All of the arguments previously presented in this file are incorporated herein by reference. Applicants respectfully request that the present rejections be withdrawn in view of the arguments and amendments presented herein.

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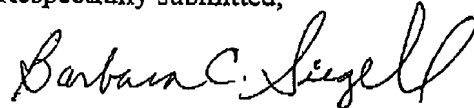
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Allowance of Claims 1-3 and 6-16 is respectfully requested. It is further requested that the restriction of Claims 4 and 5 be reconsidered and that these claims be rejoined to this application.

If any additional fees are due, please charge the fees to Deposit Account No. 04-1928 (E. I. du Pont de Nemours and Company) in order to complete the requirements.

If anything further is needed to advance the prosecution of this application, the Examiner is urged to contact applicant's attorney. In view of the foregoing amendments and arguments, allowance of the above-referenced application is respectfully requested.

Respectfully submitted,



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Dated: October 31, 2007